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Pitney Bowes Inc.
35 Waterview Drive
P.O. Box 3000
Shelton, CT 06484-8000
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ASSISTANT COMMISSIONER FOR PATENTS
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Sir:

Transmitted herewith for filing is the patent application of

Inventor: Leon A. Pintsov

For: **METHOD AND SYSTEM FOR PROVIDING VALUE-ADDED SERVICES**

Enclosed are:

- 27 pages comprising the specification, claims, and abstract.
- 6 sheets of drawings.
- A Declaration and Power of Attorney.
- A Recordation of Assignment Request and an Assignment of the invention to Pitney Bowes Inc., 1 Elmcroft Road, Stamford, Connecticut 06926-0700.
- A Certificate of Mailing by Express Mail.
- A Receipt Postcard.

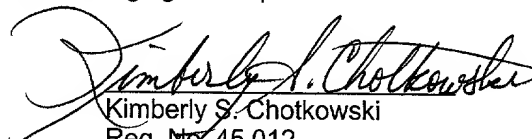
Fees calculated as follows:

Basic Fee							\$ 710.00
Claims Fee	Number Filed		Number Extra		Rate		
Total Claims	22	- 20 =	2	X	\$18.00	=	\$ 36.00
Independent Claims	3	- 3 =	0	X	\$80.00	=	\$ 0.00
Multiple Dependent Claims					\$270.00	=	\$
Total Filing Fee							\$ 746.00

Please charge our Deposit Account Number **16-1885** in the amount of \$ 746.00 for the filing fee.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Account Number **16-1885**.

A copy of this Transmittal Letter is enclosed for use in charging the Deposit Account.


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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:) Attorney Docket No.: F-214
Leon A. Pintsov) Group Art Unit: TBA
Serial No.:) Examiner: TBA
Filed: October 20, 2000) Date: October 20, 2000
Title: METHOD AND SYSTEM FOR PROVIDING VALUE-ADDED
SERVICES

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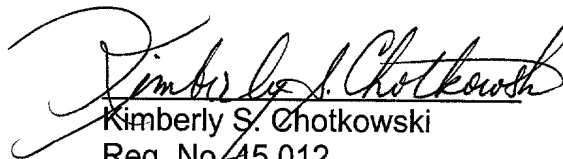
CERTIFICATE OF MAILING BY EXPRESS MAIL

Assistant Commissioner for Patents
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Sir:

I hereby certify that the attached Transmittal Letter, Patent Application, Drawings, Declaration and Power of Attorney, Recordation of Assignment, and Assignment were deposited with the U.S. Postal Service for delivery by Express Mail on October 20, 2000. The number of the Express Mail mailing label is EJ706015149US.

Respectfully submitted,


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METHOD AND SYSTEM FOR PROVIDING VALUE-ADDED SERVICES

Field of the Invention

The present invention relates generally to mailing systems and methods. More particularly, the present invention is directed to mailing systems that provides value-added services incorporated into the international processing of a mailpiece.

Background of the Invention

Postal systems have been designed and created to foster communication between individuals and business entities. Typical postal service communications have been in hard copy format; however, recently, electronic communication such as e-mail, internet, computer facsimile and digital telephony have become significant methods of communication. These communications have been mixed, forming what is known in the art of postal services as "hybrid mail". One such example of hybrid mail is traditional facsimile in which hard copy and electronic messaging are combined. While electronic mail is typically faster and more economical than traditional mail, it proposes security concerns and legal concerns. Whereas traditional mail may be slower, it is more accessible to a broader range of individuals, offers proof necessary for many daily transactions and, in some instances, it is more effective than electronic mail. However, there are several occasions when the advantages of electronic communication and the

advantages of traditional mail may be combined to provide a more effective communication solution.

To this end, postal systems have grown to provide a variety of value-added services associated with mailpiece delivery. One recognized purpose of sending a mail item is to solicit a reply message from a recipient or service provider. Such a reply message may be a response to the message contained in the mail item or a service type message having to do with sending and/or delivering and/or receiving the mail item by either the mail recipient or the service provider or both. The requirement to receive confirmation of mail acceptance and/or delivery is particularly common and normally addressed by certified, registered or insured mail. These types of mail are traditionally organized around a physical proof of acceptance and delivery, such as a physical receipt, which is signed by the service provider's clerks and/or the mail recipient and physically delivered to the mail originator (mailer).

The postal services incur considerable cost for such value-added service, and the mailer is charged a fee that is significant in comparison to the cost of regular delivery of the mail item. For example, when a mailer requests a return receipt, the recipient of the mail signs a card stating that the mail has been received. This card is physically delivered back to the original mailer as acknowledgement of mail receipt from the recipient. Such physical proofs of acceptance and delivery are economically inefficient and time-consuming. Most, if not all, postal systems require individual, manual handling of special services mail. These systems are considerably more expensive than automated mail processing systems which are based on machine readability of information present on mail items.

As of 1998, almost 20% of the population in the United States and other industrialized countries, in general, have access to electronic mail via Internet. Even a higher number of mailers use facsimile regularly. These numbers are expected to grow dramatically. Although such electronic communications provide speed and efficiency over the physical delivery of mail, there is no indication that such electronic communications will replace the physical delivery of mail. Heretofore, such electronic communications have been an alternate form of communication to the physical delivery of mail.

U. S. Patent Application Serial No. 09/ 339,768, assigned to the assignee of the present invention, discloses value-added services based on electronic confirmation of service for only the mail items communicated between the original mailer and the originating post office. It was envisioned that mail items would be of an international nature, yet the performance of special services would continue to be directly communicated between the mailer and the originating post office. This application discloses the concept of electronic confirmation of delivery in the preferred embodiment which involves printing by the mailer his/her electronic address (where he/she would like to have confirmation to be sent electronically) on the mail item itself. This electronic address may be encrypted in the digital postal mark, printed in a plain text form, or in a machine readable format in such a manner that this electronic address can be captured effectively and reliably from the mail item by any convenient data capture device, e.g., optical scanner. In an alternate embodiment, unique mailer identification (which is typically printed in the digital postage marks or other proof of postage payment indicia) can serve as a pointer to a database of mailer's registered electronic addresses, and

the electronic address for confirmation can be retrieved from such a database. Also, the electronic address would typically have to be pre-registered for a mailer to enjoy value-added services and would not work with mailers who prefer to use stamps and not register with postal authorities for digital postage payment evidencing solutions such as PC-based and other digital meters. However, the system of the present invention would work with any method of payment.

Specifically, Digital Postage Marks (DPM) (a.k.a. digital indicia, a.k.a. information based indicia) are computerized information printed or otherwise attached to a mail item to provide evidence of payment to a verification authority (e.g., the United States Postal Service). This type of information, generally referred to as postal data, preferably includes identification of the metering device (or licensee) responsible for the payment, unique identification of mail item, value of various accounting registers, location of the mail deposit/mailer's account, postage value, and may include other desired information. Such information is typically protected by a cryptographically generated validation code known as CPVC (Cryptographic Postage Validation Code). Another way to protect DPM is by supplying the verification authority with the value of the validation code (Postage Validation Code or PVC) prior to mail submission as described in U.S. Patent No. 5,612,889, assigned to the assignee of this application. This means that a mail item is sent by a mailer in one country to a recipient in another country, and the sender would like to request performance of a value-added service, for example, confirmation that the mail item was delivered to a mail box of the recipient or actually received by the recipient or a member of the household of that recipient. This also contemplates a broad variety of desired services and confirmations. Typically, in this

case, the mail item itself must be handled by several postal operators or carriers including at least the carrier of first handling (typically the postal operator of the country where mailpiece originates) and the carrier of the last handling (typically the postal operator of the country where the mailpiece is delivered to the recipient) and possibly
5 carriers operating in other intermediate countries.

The problem remains in international postal delivery that the postal operator of the first handling may not want to share electronic addresses of its customers with other postal operators (e.g., in the destination country). Sharing of the electronic address, in turn, reveals the first handling postal authority's customer list to subsequent handling
10 postal authorities, who could then usurp the customers and maintain direct communication with the original mailer. The subsequent postal authorities could circumvent the need to communicate through the first handling postal authority to the original mailer and, thus, steal the first handling postal authority's customers. This would result in loss of revenue related to the value-added services provided by the
15 original postal authority and any revenue related to services provided which uses the customer list.

In this case, the postal operator of the originating country would prefer that electronic confirmation concerning a given mail item be sent to the postal operator of the first handling, not directly to the original mailer of the mail item. This postal operator
20 then may electronically forward the confirmation to the original sender of the mail item, thus protecting valuable and confidential electronic addresses of its customers. The system of the present invention provides the ability to satisfy this need of postal operators working in an open and competitive environment.

Summary of the Invention

In accordance with the present invention, a means is provided to overcome the
aforementioned difficulties of performing value-added services requested by an original
mailer in an international postal system, without revealing the original mailer's identity
5 other than to the originating postal authority. It has been found that the mailpiece may
include information that can be used for other than security and postage payment
verification. For example, by including an e-mail address of a postal authority on the
mail item, the present invention provides a method and system for an originating postal
authority to receive a return message from a subsequent handling postal authority
10 related to the requested value-added service. This information is then electronically
delivered to the mailer. Thus, the postal authority saves on the mail cost by adding this
attribute to the mailpiece, and the originating postal authority maintains the
confidentiality of its customer database in addition to its competitive edge in the
marketplace. The savings may also be passed along to the mailer. This invention
15 integrates traditional hard copy and electronic communication into one effective
communication system that takes advantage of beneficial features of both traditional
mail and electronic mail, while offering end users (i.e., the rate-paying public) a broader
selection of communication services.

The present invention provides for the integration of electronic communication
20 information, such as an e-mail address or a telephone, facsimile or pager number, of a
first handling postal authority, into either a machine-readable format or direct printing of
such information on the mailpiece. This allows the automatic creation and forwarding of

service messages (such as delivery confirmation) to the first handling postal authority, which may then be communicated to the original mailer in a confidential and more efficient and expeditious manner. Essentially, any information about a mail item known to the original or subsequent postal authorities can be forwarded to the mailer (or other intended recipient) through an alternate electronic communication channel. This concept can be extended even to the mail item communication message, which typically is hidden from the carrier. Issues arising about confidentiality, message integrity, authentication and non-repudiation may be solved through the implementation of well-known security techniques, such as cryptography. The present invention deals effectively with issues arising based upon confidentiality, message integrity, authentication and non-repudiation.

The system of the present invention assumes that all postal administrations involved have communication means for communicating with each other. This could be private or public communication networks (such as Internet), telephone network and the like. It is assumed that for the purpose of providing cross-border postal services with electronic confirmation, all postal administrators allocate their own electronic address which they supply to all other postal operators involved. In this manner, for example, the USPS knows the electronic address of the Canada Post (e.g., Canada Post Internet Server designed to receive all confirmation messages from USPS) and vice-versa. When mail items are marked as items requiring electronic confirmation of service delivered, and when mail items have machine-readable indicators of originating and destination countries (for example, in the form of the so called license plates), then the postal operator of the destination country can capture from the mail item the license

plate information of the originating country and retrieve its electronic address either directly from the mailpiece or from a database of electronic addresses of sister postal operators. The e-mail address or country of origin information may be printed directly on the mailpiece, included in a digital post mark (DPM), or contained within a separate machine-readable indicator. Then, the postal operator of the destination country can send electronic confirmation concerning a specific item to the originating country (or country of the first handling).

When such a confirmation message arrives, the postal operator of first handling must then forward this message to the original mailer. This would require at least the knowledge of the mailer's electronic address. If the mailer is pre-registered with the postal operator of the first handling and mailer's electronic address is stored in a database indexed by mailer's identity information, then the required electronic address can be retrieved. In this case, the postal operator of the final handling postal authority, the country of final or last handling, should provide in its message to operator of the country of the first handling at least the identity of the original mailer, and they may also provide the identity of the mail item. Mailer identity and mail item identity may be accompanied by necessary confirmation information about the proof of service provided, such as, for example, digital image of the recipient's signature and mail piece digitally signed by a special private key of the public key cryptographic system of the postal administration of the country of last handling.

If the original mailer has not pre-registered his/her electronic address with the postal operator of the country of first handling, then an alternate mechanism may be used. For example, the mailer creates and imprints (or otherwise attaches) to the mail

item a machine-readable block of data. This block of data would contain mailer's electronic address for receiving confirmation encrypted with a public key of the specially designated private-public key pair of public key cryptographic system of the postal operator of the country of first handling. This block of data could be accompanied by mail item identification, when required. The mail piece digital image in some cases can provide sufficient identification to the sender.

This block of data would be captured by the postal operator of the country of last handling and communicated as an image to the postal operator of the country of the first handling. This latter postal operator, upon receiving the image electronically together with other appropriate information (e.g., digital image of the recipient's physical signature and mail piece digitally signed by a special private key of the public key cryptographic system of the postal administration of the country of last handling) will interpret and decrypt the block using its own private key to obtain MEA (Mailer's Electronic Address), Mailroom ID and MailerID. The information MailItemID and MailerID together with confirmation information described will be forwarded to the original mailer using its electronic address MEA. The entire process is completely automated.

Other methods for protecting confidentiality of the electronic address and other information concerning original mailer (e.g., MailItemID) and MailerID) are possible as well and are within the spirit and the scope of the present invention. For example, a symmetric key system can be used for encryption, whereby a secret key can be shared between mailers and postal operators of the country of first handling, or public key transport mechanism can be used to create and share a session private key between

originating mailer and postal operator. Many different ways are adequately described in *Handbook of Applied Cryptography* by A. Menezes, P. Van Oorschot and S. Vanstone, CRC Press, 1997.

It should be expressly noted that the described system allows for a natural mechanism to provide address correction services. Namely, if the intended recipient of the mail item moved and a mail carrier responsible for delivery is in possession of a new address of the intended recipient, the mail carrier can key in the new address and transmit it electronically together with a confirmation form or without it to the original mailer. This and other features and variations of the present invention are entirely within its scope and spirit.

Therefore, it is now apparent that the present invention substantially overcomes the disadvantages associated with the prior art. Additional advantages of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

Brief Description of the Drawings

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate presently preferred embodiments of the invention, and together with the general description given above and the detailed description of the preferred embodiments given below, serve to explain the principles of the invention. As

shown throughout the drawings, like reference numerals designate like or corresponding parts.

Fig. 1 is a schematic of a prior art PC metering system as an example of a mail generation subsystem that creates and prints a DPM in accordance with the present invention;

Fig. 2 is a block diagram of a postal distribution network in accordance with the present invention;

Fig. 3 is a block diagram of a mail item file created in the present invention;

Fig. 4 is a flow chart of a process of creation of mail items according to present invention;

Fig. 5 is a flow chart of the process performed by the postal operator of the last handling; and

Fig. 6 is a flow chart of the process performed by the postal operator of the first handling upon having received an electronic confirmation from the postal operator of the last handling.

Detailed Description of the Preferred Embodiments

The present invention provides a system and method for integrating value-added services information into a mail item to provide a more economical and efficient method of providing such value-added services. Although the present invention is described below as an e-mail implementation, it will be understood by those skilled in the art that a viable alternative includes substituting a mailer's pager number so that a pager

notification of mail receipt can be used along with some other receipt data. Other viable alternatives include facsimile or automated voice response notification. Furthermore, the present invention is described for a mail item that is delivered by a postal service. It will be understood by those skilled in the art that the present invention can be used with any carrier that physically delivers any item. It will be further understood that for such other carriers, the communication information that is described herein is integrated in any manner to any part of the item being physically delivered. For example, the information may be part of any machine-readable code, a bar code, DPM, or may be in plain text. It will be further understood that the system and method of the present invention apply to any mail items, including but not limited to, letters, flats, parcels, irregular parcel post, etc.

Referring now to **Fig. 1**, a schematic of a prior art PC metering system, generally designated **10**, is shown as an example of a mail generation system that creates and prints a mark **12** on mail item **14** in accordance with the present invention. In accordance with the present invention, mark **12** may include a two-dimensional bar code that contains conventional IBIP information, includes first handling postal authority indicator, confirmation notification information, and a mailer identity information. PC meter **10** includes conventional PC **16**, display **18** and printer **10**. See U.S. Patent No. 5,781,438, assigned to the assignee of this application, which is hereby incorporated by reference for a more detailed description of a PC metering system.

Referring now to **Fig. 2**, a block diagram of the system of the present invention is shown. The system includes an international postal distribution network, generally designated **100**, which processes a mail item **14** that is originated by the mailer. The

mailer may write the letter by hand or use mailer's PC computer system **10** and deliver mail item **14** to a first handling postal authority. If written by hand, a machine-readable block of dates is provided on the mailpiece at the postal authority. If the mail item is created on the mailer's own computer, and the mailer is pre-registered, then the machine-readable code may be generated and printed by the mailer's computer. In this instance, the mailer's electronic address may be stored in a database identified by the mailer's identity information. If the mailer is not pre-registered, the machine readable code includes an electronic address encrypted with a public key of a specially designated public-private key part of the public key cryptographic system of the first handling postal authority. This information may also be combined with a mail item identification, if needed. The mail item is then delivered to at least one more postal authority before reaching intended recipient **30**. For illustrative purposes, this block diagram depicts only a first and a final handling postal authority. During the delivery process, value-added services information is captured in accordance with the present invention.

The first handling postal authority distribution network **105** includes conventional components such as: facer/canceller **110**; MLOC (multi-line optical character reader) sorters **120** that typically perform a primary sort for mail items that have not been presorted; intermediate bar-code sorters **130**, postal transport means **140** for transporting the mail item from one postal facility to another; final bar code sorters **150**; and delivery means **160**, such as a mail carrier delivery to a mailbox. In accordance with the present invention, first handling postal authority distribution network **105** further includes a digital data capture scanner and processing computer system **170** that is

optionally coupled to one or more of the aforementioned components of the first handling postal authority distribution network **105** for the purpose of maintaining information, including value-added services information, that is provided during processing.

5 The final handling postal authority distribution network **205** includes conventional components such as: facer/canceller **210**; MLOCR (multi-line optical character reader) sorters **220** that typically perform a primary sort for mail items that have not been presorted; intermediate bar-code sorters **230**; postal transport means **240** for transporting the mail item from one postal facility to another; final bar code sorters **250**; and delivery means **260**, such as a mail carrier delivery to a mailbox. Delivery means **260** includes a scanner **262** for scanning mark **12** at the time of delivery. In accordance with the present invention, final handling postal authority distribution network **205** further includes a digital data capture scanner and processing computer system **270** that is optionally coupled to one or more of the aforementioned components of the final handling postal authority distribution network **205** for the purpose of capturing and processing information, including value-added services information, that is read from the mark of the mail item being processed. As information is captured by digital data capture scanner and processing computer system **270**, a mail item file **280** (described in detail below) is created. Final handling postal authority distribution network **205** determines the electronic address of first handling postal authority distribution network **105** from either a direct scanning of mark **12** of the mailpiece **14** or, preferably, by scanning mark **12** of mailpiece **14** for the first handling postal authority distribution network **105** identity and using database **290** for determining first handling postal

authority distribution network **105** electronic address. If database **290** is implemented, changes in addresses may be made efficiently because the data table, rather than each postal authority, would require updating. Depending on the value-added services being processed, digital data capture scanner and processing computer system **270** communicates mail item file **280** through a public electronic communications network **300** to be stored with the first handling postal authority's digital data capture scanner and processing computer system **170**. Communications network **250** may be any conventional communications network, such as the Internet or a cellular/conventional telephonic network, or any combination thereof depending on the type of communication information read from the mark.

Digital data capture scanner and processing computer system **170** of first handling postal authority distribution network **105** then determines the address of the original mailer using database **180** and communicates the stored mail item file **190** through use of public electronic communication network **250** to the mailer's computer systems **10** or a trusted third party repository **300**. The communication between mailer and the first handling postal authority is maintained confidential such that the final handling or any other postal authority is not provided access to the original mailer's electronic address.

Referring now to **Fig. 3**, a block representation of mail item file **300** that is created, first for delivery to recipient, then updated and delivered to first handling postal authority distribution network **105** and finally, delivered to the original mailer. Mail item file **300** may include: a header **305** of postal information that has been captured from mail item **14**; a mail item identification number **310**; mailer ID **315**; and a list **318** of

value-added services requested. The present invention provides for one or more of such requests. Mail item file **300** further includes various data elements **320** that are optionally captured depending on the value-added services requested. Data elements **320** may include induction time **330** and induction address **332** indicating when and where mail item **14** enters the postal distribution network **100**; intermediate processing times **340**; and intermediate processing addresses **342** indicating various stages of processing within the international postal distribution network **100**, and delivery time **350** and delivery address **352** indicating when and where the mail item leaves the postal distribution network **100**. Data elements **320** may further include information captured when the mark **12** was read, such as a hash value **360** of the contents of mail item **14** and a digital signature and/or certificate **370**.

Now turning to **Fig. 4** there is shown a flow chart of the process of creating a mail item according to the present invention. At step **400**, the mail item preparation process begins. Address information is retrieved and payment information is computed including the unique mail item identifier (MailItemID) and mailer identifier (MailerID). At step **410**, the process queries as to whether or not the retrieved address is international. If the answer to the query at step **410** is "no," then the process continues to step **420** where the mail item is processed through normal mail finishing. If, however, the answer to the query at step **410** is "yes," then the method continues to step **430**. At step **430**, the process queries as to whether or not the mail item requires an electronic confirmation of service. If the answer to the query is "no," then, the process continues to step **420** where the mail item is processed through normal mail finishing. If, however, the answer to the query at step **430** is "yes," then the method continues to step **440**

where a mailer electronic address (MEA) is retrieved for service confirmation, such as an e-mail, fax or pager address. At step **450**, a public key (PK) of the postal administration of the first handling is retrieved. At step 460 using an RSA, DSA or an ECDSA algorithm, $[E_{PK} [MEA, MailItemID, MailerID]]$ is computed. $E_{PK} [MEA, MailItemID, MailerID]$, where E stands for operation of encryption, is the result of encryption of data file MEA, MailItemID, and MailerID. PK is a public key of the specially designated private-public key pair of public key cryptographic system of the postal operator of the country of first handling; MEA is Mailer's Electronic Address; MailItemID is a unique identity of the mail item; and MailerID is a unique identity of the mailer. The encryption operator E can be RSA, DSA or ECDSA or any other appropriate reversible type as described, for example, in (many different way are adequately described in *Handbook of Applied Cryptography*, by A. Menezes, P. Van Oorschot and S. Vanstone, CRC Press, 1997.)

At step **470**, the process formats the mail item address and other printable information including, the origination destination country code information, digital postmark, FIM mark and electronic confirmation service marks along with $[E_{PK} [MEA, MailItemID, MailerID]]$ and imprints them on the mail. At step **480**, the process queries as to whether or not the mail item processed was the last mail item. If the answer to the query at step **480** is "no," then the process returns to step 400. If, however, the answer to the query at step **480** is "yes," then the mail preparation process ends.

Now turning to **FIG. 5**, there is shown a flow chart of the process performed by the postal operator of the last handling of the mailpiece. At step **500**, the mail item which has been received from the postal operator of the first handling is brought into the

local delivery facility of the postal operator of the final handling. At step **510**, the mail item is scanned, and a digital image of the mail item and an identifier (the license plate) for the postal operator of the first handling are obtained. At the same time, a physical signature form is printed, and the image of the mail item is stored. At step **520**, the postal operator of the final handling delivers the mailpiece to the intended recipient and, if required, obtains a physical signature of the recipient. The paper and information detailing delivery are brought back to the local deliver facility. At step **530**, the form which includes the physical signature is scanned to obtain a digital image. The digital image of the physical signature and the mail item are then merged and compressed to obtain a transfer file which is to be transmitted to the postal operator of the first handling.

At step **540**, the postal operator of the final handling retrieves the electronic address of the postal administrator of the first handling using the license plate information and digitally signs the received transfer file using a private key of the postal operator of the last handling. At step **550**, the digitally-signed transfer file is transmitted to the postal operator of the first handling using the electronic address of the postal operator of the first handling as obtained from step **540**.

Now turning to **FIG. 6** is shown a flow chart of the process performed by the postal operator of the first handling upon having received an electronic confirmation from the postal operator of the last handling. At step **600**, the postal operator of the first handling receives the digitally signed file transferred from the postal operator of the last handling and retrieves the public key from of the postal operator of the last handling and verifies the digital signature using the public key. At step **610**, the determination is

made as to whether or not the digital signature is correct. If the answer to the query at step 610 is "no," then the method progresses to step 620 where the transfer file is rejected, and an investigation commences. If, however, the answer to the query at step 610 is "yes," then the method progresses to step 630, where the transferred file is parsed, and the digital images of the mailpiece and physical signature form are retrieved and are parsed to obtain a machine readable block of data containing E_{PK} [MEA, MailltemID, MailerID]. At step 640, the process is directed to decrypt the block D_{PRK} [E_{PK} [MEA, MailltemID, MailerID]] = MEA, MailltemID, MailerID. At step 650, the process digitally signs and electronically sends the digital images of the mailpiece and physical signature form to the original mailer using the MEA. The invention has been described herein above has referenced a first and a final handling postal authority, however, it is to be appreciated that the invention may also be practiced at intermediate handling postal authorities.

This process in a formal notation looks as follows: D_{PRK} [E_{PK} [MEA, MailltemID, MailerID]] = MEA, MailltemID, MailerID, where D stands for operation of decryption, and PRK is the private key of the specially designated private-public key pair of public key cryptographic system of the postal operator of the country of first handling.

It must be expressly noted that, in some cases, it would be sufficient to forward to the original mailer only the image of the mail item together with the image of physical signature form (for the confirmation of receipt service) without MailltemID. Also in some cases, MailerID is redundant with Mailer's Electronic Address (MEA) if each mailer has only one electronic address. It should be also expressly noted that the postal operator of the last handling may digitally sign all files transmitted to the postal

operator of the first handling for the purpose of protecting integrity and authenticity of data as it is usually done. Also, it may be necessary to preserve legality of proofs of electronic delivery.

Many features of the embodiments disclosed herein represent design choices
5 selected to exploit the inventive concept as implemented in a particular mailing system environment. However, those skilled in the art will recognize that various modifications can be made without departing from the spirit of the present invention. Therefore, the inventive concept in its broader aspects is not limited to the specific details of the preferred embodiments described above, but is defined by the appended claims and
10 their equivalents.

What is Claimed is:

1. A method for providing confirmation relating to the distribution of a mailpiece in an international mailing system, the method comprising:

- a) combining a set of value-added services data into a machine readable mark on a mailpiece, said value-added services data including addressing information for a sending receipt to a first handling postal authority and a mailer identification code;
- b) reading said mark at a second handling postal authority for determining whether a value-added service has been requested;
- c) performing said determined value-added service;
- d) sending a message to said first handling postal authority at the address determined from the value added services data, said message relating to said performed value-added service; and
- e) determining an original mailer electronic address at said first handling postal authority based upon said mailer identification code.

2. A method as claimed in claim 1 wherein said mailer identification code is encrypted.

3. A method as claimed in claim 1 further including the step of delivering said message to said original mailer.

4. The method as claimed in claim 1 wherein said data relating to value-added service request includes a first handling postal authority e-mail address.
5. The method as claimed in claim 1 wherein said data relating to value-added service request includes a first postal authority telephone number.
6. The method as claimed in claim 1 wherein said data relating to value-added service request includes a first postal authority facsimile number.
7. The method as claimed in claim 1 wherein mailer address is determined by using a look up table.
8. The method as claimed in claim 1 wherein said value-added service request is an electronic confirmation of receipt.
9. A method for providing value-added services relating to the distribution of a mailpiece within an international mailing system, the method comprising the steps of:
 - a) creating a first database including a plurality of postal authority identifications corresponding to a plurality of postal authority addresses;
 - b) creating a second database at a first handling postal authority, said database including a mailer identification corresponding to said mailer address;

- c) creating a set of data in response to a request for a value-added service; said data including said mailer identification and a first handling postal authority identification;
- d) incorporating said set data and on said mailpiece;
- e) obtaining said set of data from said mailpiece at a second handling postal authority;
- f) performing said request for value-added service;
- g) creating a mail item file including a set of mailpiece data and said set of data relating to said performed value-added service; and
- h) determining said address of said first handling postal authority based upon said first database;
- i) delivering said mail item file to said first handling postal authority address; and
- j) delivering said mail file item to said original mailer address based upon said second database.

10. The method as claimed in claim 9 further including the step of updating said mail item file to include data related to said performance of said requested value-added service.

11. The method of claim 9 further including the steps of:

- (a) associating a value-added service request identifier with said request for said value-added service;

- (b) printing said value-added service identifier on a mailpiece;
- (c) reading said value-added service identifier to determine whether a request for a value-added service has been made.

12. The method as claimed in claim 11 wherein said first database includes a first handling postal authority e-mail address.

13. The method as claimed in claim 11 wherein said second database includes a mailer's e-mail address.

14. The method as claimed in claim 11 wherein said value-added service request is an electronic confirmation of receipt.

15. The method as claimed in claim 11 wherein said value-added service request is an electronic communication.

16. A system for providing value-added services relating to the distribution of a mailpiece within an international mailing system comprising:

- a) a first database of mailer addresses indexed by a mailer identification code;
- b) a second database of postal authority addresses indexed by a postal authority identification code;

- c) a means for incorporating a request for a value-added service and a mailer identification code on a mailpiece;
- d) means for creating a mail item file at said second postal authority; said mail item file including said mailer identification code and said value-added service request;
- e) means for determining, at said second postal authority, said first postal authority address; and
- f) means for performing said value-added service;
- g) means for communicating said performance of said value-added service to said original mailer, said mailer address obtained using said first database.

17. The system as claimed in claim 16 wherein said mailer identification code is encrypted.

18. The system as claimed in claim 16 wherein said first database includes said mailer e-mail address.

19. The system as claimed in claim 16 wherein said second database includes said postal authority e-mail address.

20. The system as claimed in claim 16 wherein said value-added service request is a confirming electronic message.

21. The system as claimed in claim 17 wherein said set of data relating to value-added service request includes a facsimile number.

22. The system as claimed in claim 17 wherein said value-added service request is an electronic confirmation of receipt.

METHOD AND SYSTEM FOR PROVIDING VALUE-ADDED SERVICES

Abstract of the Invention

A system and method is disclosed for providing confirmation relating to the distribution of a mailpiece within an international mailing system. The invention includes a determination of postal data required for performing value-added services desired for the mailpiece. The value-added services data includes addressing information for a return receipt from an intended mailpiece recipient through a final handling postal authority and a first postal authority to the original mailer. A machine readable mark is created which includes return data and value-added services data. During the delivery process, the value-added service is captured by the final handling postal authority, the mailpiece is delivered to the intended recipient, the value-added service is performed, and the data related to the delivery is captured by the final handling postal authority. The final handling postal authority then transmits this information to the first handling postal authority who then communicates the information to the original mailer. The invention is practiced such that the identity of the mailer is disclosed only to the original postal authority and not to subsequent handling postal authorities.

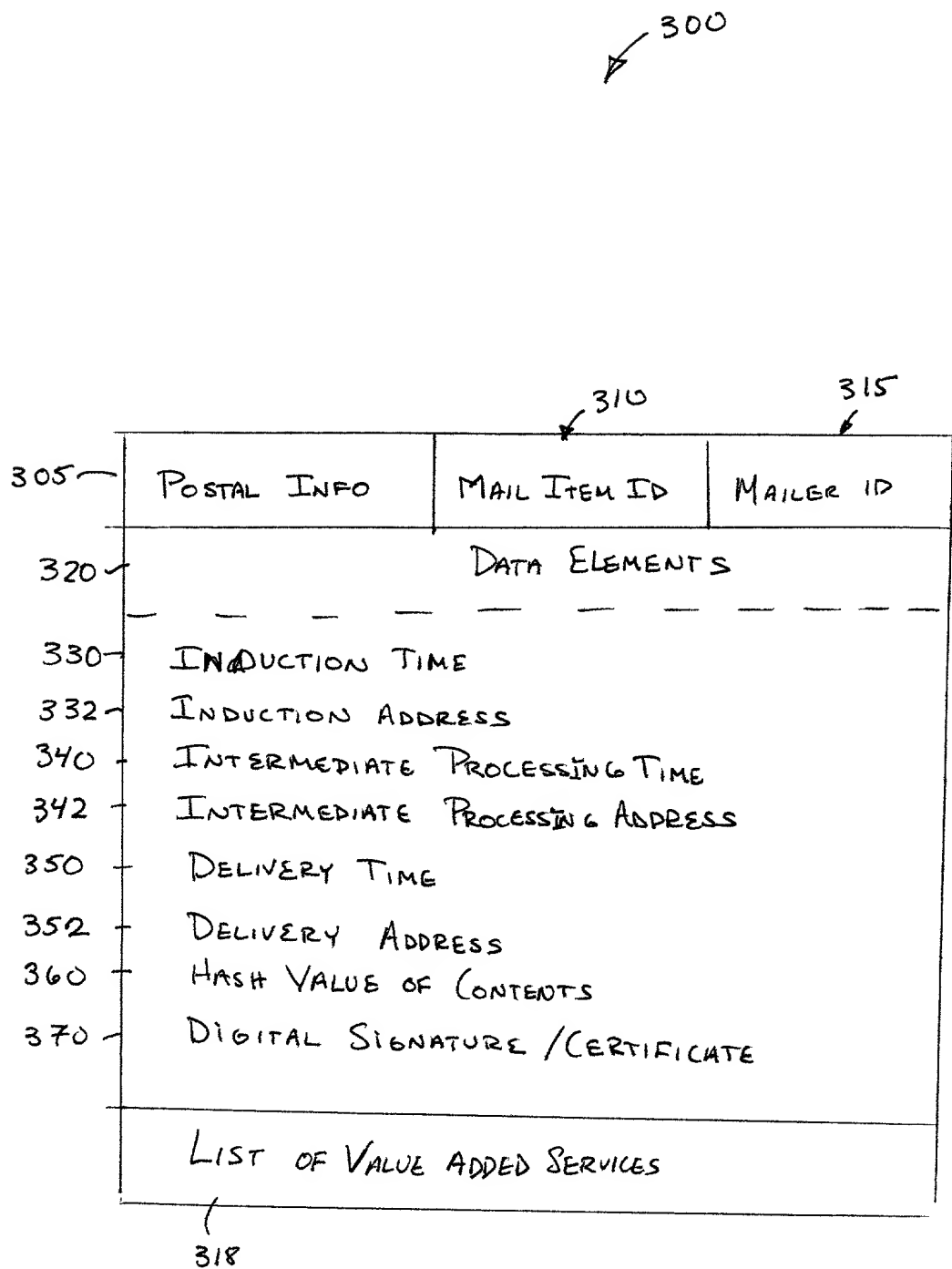
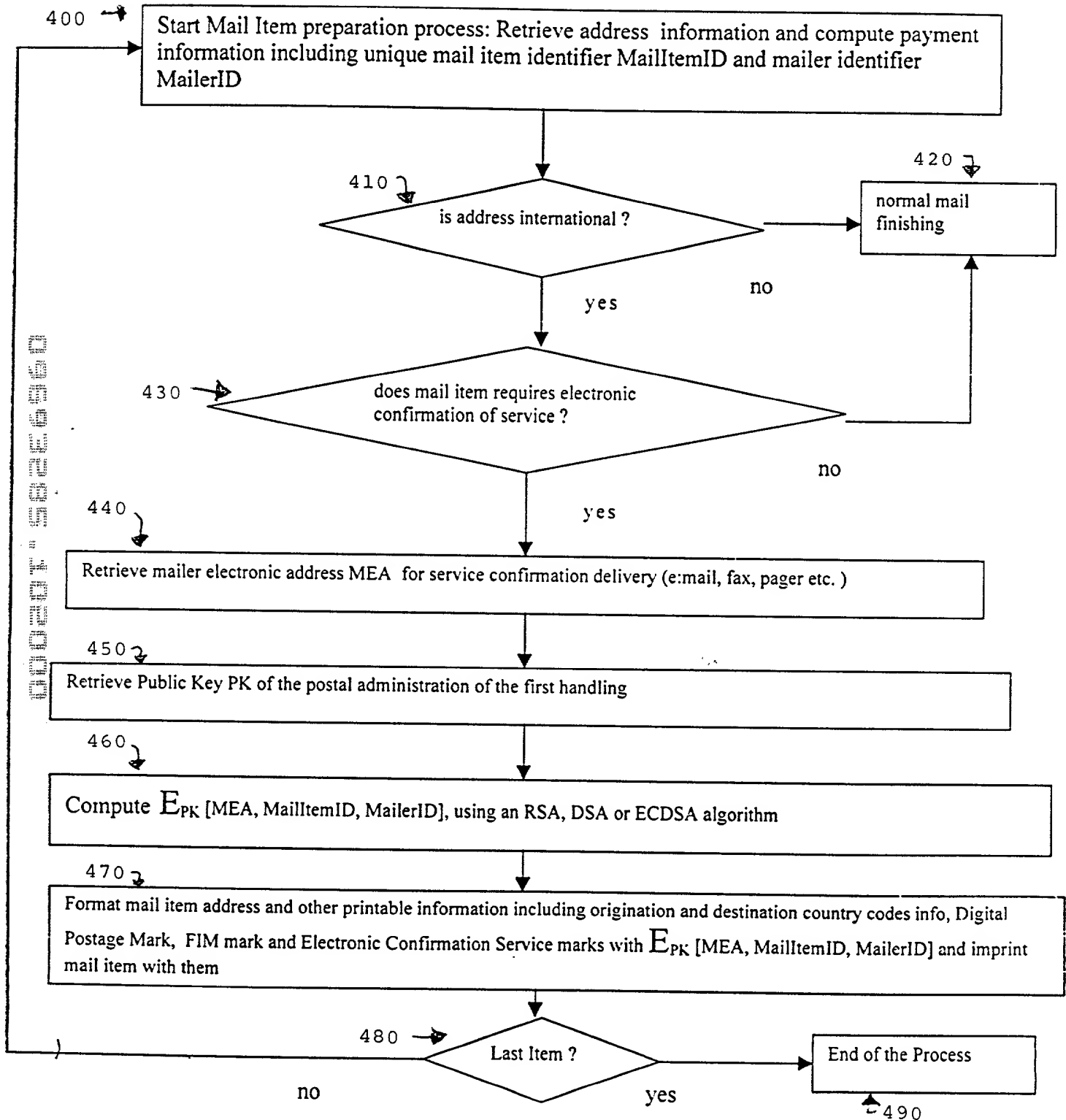
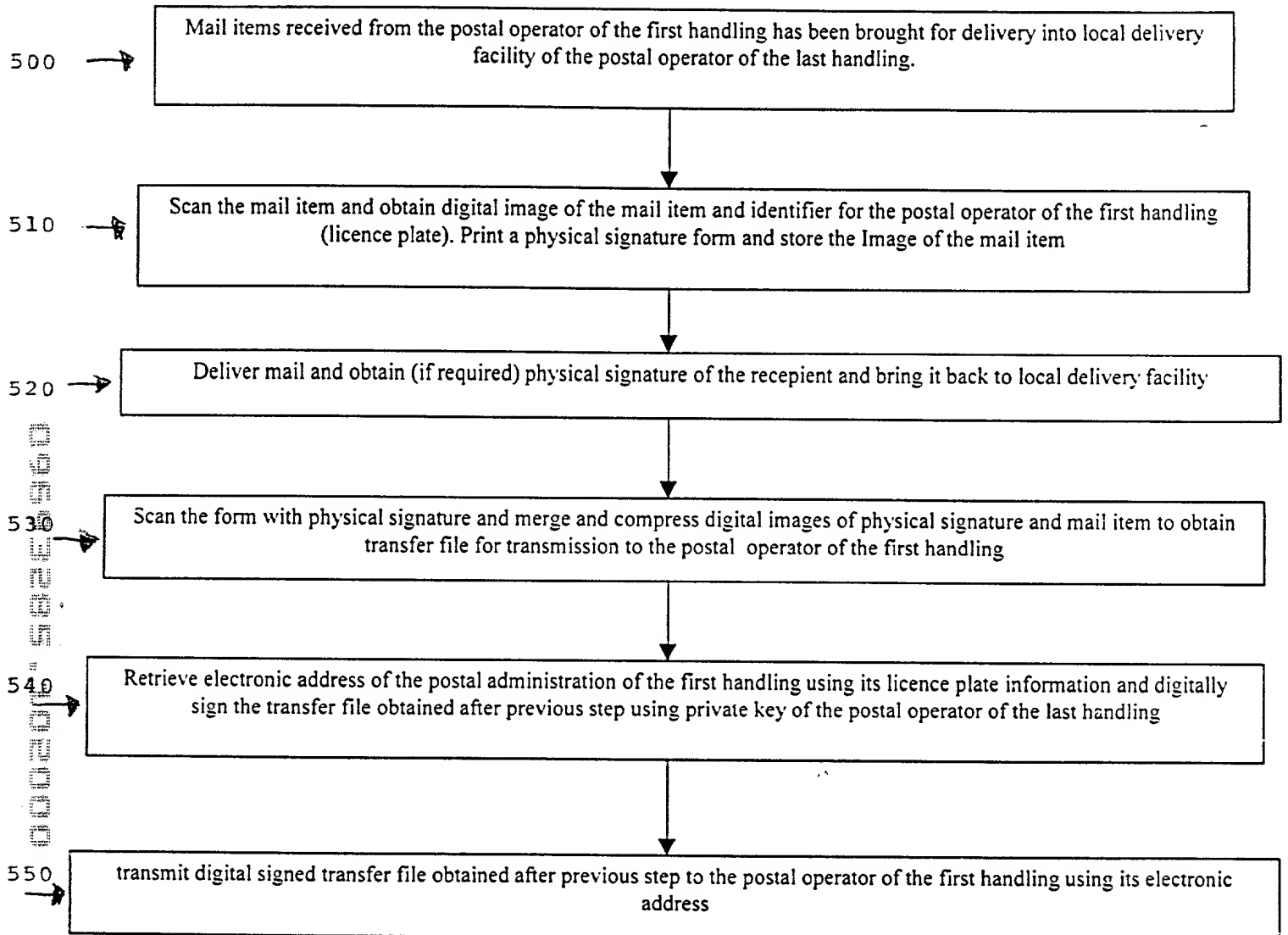
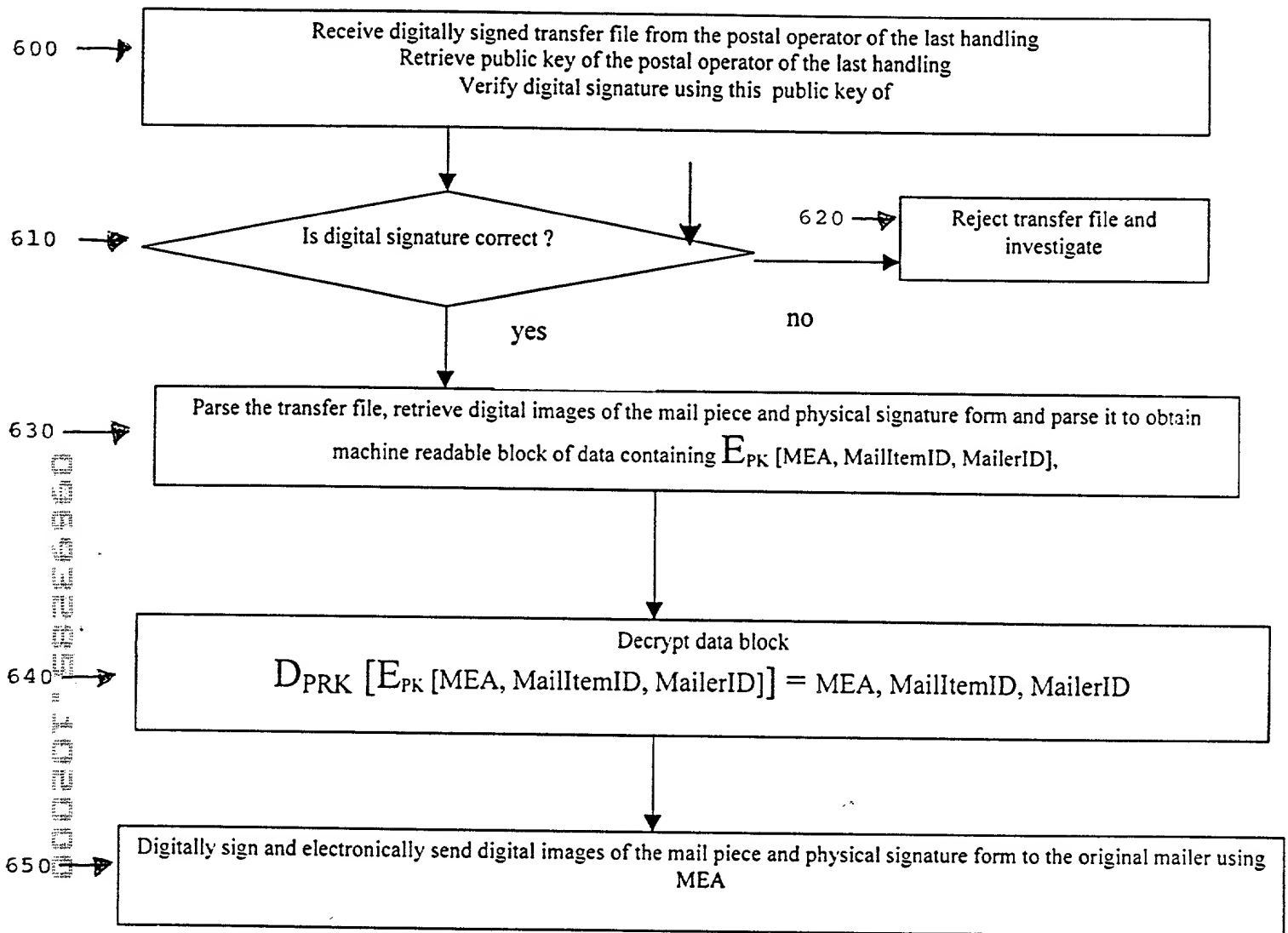


FIG. 3







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Reg. No. 45,012
Reg. No. 32,276
Reg. No. 24,020
Reg. No. 26,307

Country	Year	Population (millions)	Urban population (millions)	Urban population (%)	Population density (per sq km)	Urban population density (per sq km)	Population growth rate (%)	Urban population growth rate (%)	Population growth rate (%)	Urban population growth rate (%)	Population growth rate (%)	Urban population growth rate (%)
Algeria	1980	12.0	4.0	33.3	100	300	1.5	2.5	1.5	2.5	1.5	2.5
Algeria	1985	13.0	4.5	34.6	110	330	1.8	2.8	1.8	2.8	1.8	2.8
Algeria	1990	14.0	5.0	35.7	120	360	2.0	3.0	2.0	3.0	2.0	3.0
Algeria	1995	15.0	5.5	36.7	130	390	2.2	3.2	2.2	3.2	2.2	3.2
Algeria	2000	16.0	6.0	37.5	140	420	2.4	3.4	2.4	3.4	2.4	3.4
Algeria	2005	17.0	6.5	38.2	150	450	2.6	3.6	2.6	3.6	2.6	3.6
Algeria	2010	18.0	7.0	38.9	160	480	2.8	3.8	2.8	3.8	2.8	3.8
Algeria	2015	19.0	7.5	39.5	170	510	3.0	4.0	3.0	4.0	3.0	4.0
Algeria	2020	20.0	8.0	40.0	180	540	3.2	4.2	3.2	4.2	3.2	4.2
Algeria	2025	21.0	8.5	40.5	190	570	3.4	4.4	3.4	4.4	3.4	4.4
Algeria	2030	22.0	9.0	40.9	200	600	3.6	4.6	3.6	4.6	3.6	4.6
Algeria	2035	23.0	9.5	41.3	210	630	3.8	4.8	3.8	4.8	3.8	4.8
Algeria	2040	24.0	10.0	41.7	220	660	4.0	5.0	4.0	5.0	4.0	5.0
Algeria	2045	25.0	10.5	42.0	230	690	4.2	5.2	4.2	5.2	4.2	5.2
Algeria	2050	26.0	11.0	42.3	240	720	4.4	5.4	4.4	5.4	4.4	5.4
Algeria	2055	27.0	11.5	42.6	250	750	4.6	5.6	4.6	5.6	4.6	5.6
Algeria	2060	28.0	12.0	42.9	260	780	4.8	5.8	4.8	5.8	4.8	5.8
Algeria	2065	29.0	12.5	43.1	270	810	5.0	6.0	5.0	6.0	5.0	6.0
Algeria	2070	30.0	13.0	43.3	280	840	5.2	6.2	5.2	6.2	5.2	6.2
Algeria	2075	31.0	13.5	43.5	290	870	5.4	6.4	5.4	6.4	5.4	6.4
Algeria	2080	32.0	14.0	43.8	300	900	5.6	6.6	5.6	6.6	5.6	6.6
Algeria	2085	33.0	14.5	43.9	310	930	5.8	6.8	5.8	6.8	5.8	6.8
Algeria	2090	34.0	15.0	44.1	320	960	6.0	7.0	6.0	7.0	6.0	7.0
Algeria	2095	35.0	15.5	44.3	330	990	6.2	7.2	6.2	7.2	6.2	7.2
Algeria	2100	36.0	16.0	44.4	340	1020	6.4	7.4	6.4	7.4	6.4	7.4
Algeria	2105	37.0	16.5	44.6	350	1050	6.6	7.6	6.6	7.6	6.6	7.6
Algeria	2110	38.0	17.0	44.7	360	1080	6.8	7.8	6.8	7.8	6.8	7.8
Algeria	2115	39.0	17.5	44.9	370	1110	7.0	8.0	7.0	8.0	7.0	8.0
Algeria	2120	40.0	18.0	45.0	380	1140	7.2	8.2	7.2	8.2	7.2	8.2
Algeria	2125	41.0	18.5	45.1	390	1170	7.4	8.4	7.4	8.4	7.4	8.4
Algeria	2130	42.0	19.0	45.2	400	1200	7.6	8.6	7.6	8.6		

DECLARATION AND POWER OF ATTORNEY

Patent Application

Attorney's Docket Number

F-214


Page 2 of 2

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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